Thesis/
Reports
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UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

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3520 River Basin Programs

February 5, 1971

California Water Plan

Forest Supervisors

Attached are two important documents pertaining to the California Water Plan. One of these documents, The California Water Plan: An Assessment of Its Meaning to Forest Service Programs, is a staff paper prepared by Klubben and Roloff of our River Basin Survey Section, Division of Soils and Watershed Management. This paper is designed to acquaint Forest Service people with the California Water Plan. It discusses various projections used during preparation of the California Water Plan and the assessment of future water needs for California. It points out the desirability of the Forest Service taking a definite position regarding the California Water Plan, and concludes with two important recommendations - both of which have my endorsement. These recommendations are restated here:

ALR

(1) "Identify and study proposed water developments well in advance of authorization. Using a systematic approach probably in the format of a Stage I impact survey report, we should analyze all aspects of development, not necessarily waiting until we are invited to do so by development agencies. By the time we are asked to participate, it is often difficult to make substantive changes.

Factors that should be considered include: the justification for each development; the alternative locations and sizes of structures; the impact upon national forest resources and our multiple use programs; and the true economic impacts, particularly upon local areas. Forest Service State and Private responsibilities should be fully considered in the analysis.

(2) Actively participate in selecting the alternative that best satisfies our needs and creates the least impact upon our programs. In the event that our studies indicate that a proposal is not in the best interests of the public, as we see it, we should vigorously oppose development. Part of such opposition should be to take our case to the public through public hearings and the news media. This would help to give emphasis to the fact that we accept full responsibility for the management of the public lands under our jurisdiction

and that we take this responsibility seriously. Proposals which substantially affect the use and management of privately owned forest and related lands should be treated in much the same way, although we might not be able to give as much detailed attention to these.

One of the benefits of asserting ourselves with regard to water development could be to place us in a position of leadership, where we should be, in matters pertaining to environmental quality and enlightened land use and management."

The Water Resources Bulletin 160-70, mentioned on page(8)of the staff paper, is also attached. Both of these documents are an important source of information and reference when discussing the California Water Plan. They should be retained for ready reference. Sufficient copies are provided for Ranger District distribution.

DOUGLAS R. LEISZ
Regional Forester

Attachments

THE CALIFORNIA WATER PLAN: AN ASSESSMENT OF ITS MEANING TO FOREST SERVICE PROGRAMS

Staff Paper

FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
DIVISION OF SOILS AND WATERSHED MANAGEMENT
CALIFORNIA REGION

By
Lyle M. Klubben
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THE CALIFORNIA WATER PLAN: AN ASSESSMENT OF ITS MEANING TO FOREST SERVICE PROGRAMS

I. Summary

The California Water Project, while over 90 percent complete with its series of reservoirs and related water development facilities, includes projects authorized but not built, such as Dos Rios. However, the overall California Water Plan is far from complete. During the next few years, the State of California will be making far reaching and long lasting decisions on the future use of its water resources. These decisions could also affect both the land where the water originates and the land where the water will be used.

The water plan, described as flexible, appears to be something less than this. While alternatives to traditional surface water development facilities are discussed, plans are being formulated for construction of reservoirs on the remaining major streams and rivers in Northern California. These reservoirs will store the water necessary to meet cropland, municipal and industrial, and other requirements. Unfortunately, the plan does not present a range of projected water needs. Rather, it projects the near maximum water needs from all sectors, based on current inefficient water use. In addition to a very high population projection of nearly 55 million people by 2020, the plan includes as the major part, water for several million acres of new cropland. With the nationwide chronic problem of over-production of agricultural crops, projected requirements for additional irrigation appear unreasonable. Furthermore, if these water requirements are not met, the impact on the region's economy, including gross domestic output and employment, will be quite minimal. These things lead to the conclusions that some proposals under the California Water Plan are questionable and may be unnecessary.

National forests will be significantly affected by future water developments. Inundation, related roads, transmission rights-of-way, and other developments will eliminate or drastically modify present and future land uses such as timber production, grazing, and wildlife. While providing additional area for certain water-based recreation activities, reservoirs will effectively eliminate the possibility of designating portions of rivers and streams, having national significance, under the Wild and Scenic Rivers Act.

II. Objectives of this Position Paper

A. To provide knowledge to Forest Service field people regarding the California Water Plan and the California Water Project:

Many Forest Service people have only a slight knowledge of the data and rationale upon which the development of water in the State is based. We find ourselves in a position of rather blindly accepting the assertions of water development agencies and often we don't have enough information to ask intelligent questions. It is our hope that this paper will fill at least part of the knowledge gap.

B. To analyze the need for a Forest Service position on the California Water Plan:

The Forest Service is the custodian for most of the presently undeveloped rivers in the State. Many of these are now under consideration for development within the next few decades. Many agencies of Federal, State, and local governments will be taking firm stands for or against development of specific rivers. Citizens organizations and groups will be doing much the same. It seems to follow that we, in the Forest Service, will be placed in an embarrassing, if not untenable, position if we, the custodians of the rivers and the managers of the lands surrounding them, do not have a firm grasp of all the factors influencing these important decisions.

Two laws have been passed recently which add to the urgency of establishing such a position. These are the Wild and Scenic Rivers Act and the Environmental Quality Act. We will be asked to make some very definite recommendations regarding the former, probably in the near future. The requirements of the latter law are not so well understood at present but it too might force us to make decisions that could have far-reaching effects. It is even possible that either of these laws could be used as a basis for legal action against the Forest Service if our decisions are unpopular. Firm policy based upon the latest and best information is our best defense.

Perhaps the strongest need for a firm position is to protect and promote our multiple use objectives. Development of rivers is often planned without regard for the best use of

land. Our plans for well balanced programs can be completely upset by programs for water development promulgated by other agencies. We should know the facts and be firm in our position. This, of course, is not to say that we shouldn't change our position if circumstances warrant, but we should do so only when we are fully convinced that the need to do so overbalances the importance of our multiple use programs.

C. To provide the basis for a Forest Service Position:

The basis for our position must be sound knowledge. We have developed, through our Type I Framework Study, a fund of data and facts about the California Water Plan and about the present use and projected needs for land and water. These can be published and provided to all our people. These data are an excellent basis for our position, particularly when they are coupled with other data specific to a river basin and the plans to develop it.

III. Definitions

A. Position Paper - A document outlining the aims, objectives and philosophy (position) of an agency (in this case, the Forest Service). A Forest Service position paper regarding the California Water Plan should not only pertain to the Plan's effects upon the National Forests, but it should also cover our cooperative responsibilities for private forest and brush covered lands.

B. The California Water Plan - Published in May 1957, the Plan provided a broad and flexible pattern into which future definite projects could be integrated in an orderly fashion. It recognized that allowances would have to be made for additional experience, technological advances, and other unforeseeable conditions. The basic concept is that it will serve as a master plan to meet the ultimate water requirements at some unspecified but distant date when California's land and water development essentially reaches a state of completion.

C. The California Water Project - This is the portion of the California Water Plan which was put into effect when the California Water Resources Development Bond Act (Burns-Porter Act) was passed by the State Legislature and was approved by the voters in 1960. The State Water Project is now about 90% complete although some controversial features are yet to be constructed.

D. Economic Levels of Development

1. Base Plan Projections - This plan is considered the regional choice for future development, and is the basis for the California Water Plan. Regional population is based on the nationwide Series C projection (1960 census data). Intraregional population distribution was determined by the State of California, Department of Water Resources. Projections for the economic sectors were based on regional assumptions.

2. OBE-ERS Plan Projections (Office of Business Economics - Economic Research Service) - This plan is considered the regional share of the National Efficiency level of development. Regional population is based on Series C projections, with intraregional distribution based on past trends. Projections for the economic sectors were based on nationwide assumptions.

3. 1970 Series D Plan Projections - This is the most recent regional choice plan to be considered for future development. Regional population is based on the nationwide Series D projection and indicates a lower birth rate than Series C. Projections for the economic sectors were based on regional assumptions.

IV. Present Situation

A. With the California Water Project over 90% complete (i.e. over 90% of development is constructed or authorized) there is little point in establishing a position regarding it in total except as it fits in generally with the Water Plan. Consideration of individual facilities within the project remains pertinent, but this is outside the scope of an overall position.

B. The California Water Plan is based upon the following assumptions:

1. That the State's population will increase at about the same rate as pre-1955. This means we will have about 25.5 million people in 1980, about 38 million in 2000, and about 55 million in 2020. However, the intra-state distribution of population will not follow historical patterns precisely; the South Coastal Area will "fill up" and people will settle elsewhere rather than resort to "high rise" and other multiple dwellings.

2. That the agricultural industry will expand on about the same lines as in the past, i.e. cropping patterns will remain about the same, but there will be a slight percentage increase in production. Presently California produces roughly 10% of the Nation's agricultural products and by 2020 the share will be about 14%.

3. That personal income will increase over the years and the total employment rate (% of population employed) will increase slightly.

4. That water use efficiencies will remain about the same as at present. The Plan, however, allows the flexibility to adjust water needs if and when greater efficiency is achieved. It does not contain any program or recommendations for increasing efficiency.

5. That other technological advances such as desalination, recycling, weather modification, increasing water yield through watershed management, and other measures that would reduce total surface water development needs will have little effect upon water requirements. Again, the flexibility of the plan allows for the incorporation of any new data but there is no provision for helping these things to come about.

6. That the need for hydro-electric power is an important part of water development. However, from the Type I River Basin Survey, we know that even with the development of all feasible sources in the region, only 2-3% of the power needs can be supplied by hydro-electric facilities. In 1965, about 26 percent of the generating capacity was from hydro-electric power.

7. That conventional surface water development is the only real way of solving our water problems.

C. The major weaknesses in the California Water Plan and the main areas of contention and opposition are as follows:

1. The premises upon which water requirements are based are weak in some areas. Water is developed in the State for two major purposes, municipal and industrial (M&I) use and agricultural use. M&I needs account for about 10% of the present use and this percentage is expected to increase to about 28% by 2020. Projections for such use are generally made on a per capita basis, i.e. the

historical water use per capita is simply multiplied by the projected population. There is nothing basically wrong with this method except that historical use has been high, in many cases wasteful, and such a projection tends to result in the highest possible projected needs. It would seem logical to project a range of possibilities based upon varying use rates. For example, California Water Plan projections show the need for about 14 million acre feet for M&I use in 2020. If only a 10% savings could be achieved requirements would be 1.4 million acre feet less. Such a savings could equal the transport water storage capacity of at least one major reservoir. For example, the Oroville reservoir has an average transport capacity of 3.6 million acre feet; Dos Rios (proposed for the Middle Fork, Eel River) 660,000 acre feet; English Ridge (proposed for the Upper Main Eel River) 216,000 acre feet; Hamburg (proposed for the Klamath River) 523,000 acre feet; and the Lower Trinity System (Helena, Schneiders Bar, Eltapom, Mills and Beaver, all proposed) totaling 2.7 million acre feet.

In the case of projecting agricultural water needs, the situation is more complex. There are several questions involved:

(a) Should we be developing water to produce crops which can be grown in other sections of the country without irrigation?

(b) Do we not risk causing over supply problems and resultant price lowering that in turn could result in the need for subsidies?

(c) Are we not creating unfair competition by furnishing water to farmers at less than it costs to develop it? Farmers growing the same or similar crops in other areas do not have this advantage.

(d) Can we justify the development of agricultural water at great public cost, both in dollar and environmental values, unless the water is used in the most efficient way possible? Water use in many areas is now controlled by water rights established decades ago. These rights were not, and still are not, based upon need and no standards have been established for water use. There is great doubt whether even

the newest adjudications have any great relation to need. The cheaper the water is to the farmer, the less incentive he has to utilize it efficently. As in the case of M&I water needs, a savings of 10% through better efficiency could mean a saving of almost 3.6 million acre feet of reservoir storage in 2020.

2. The State Water Plan is too narrow in that it doesn't recognize the need for coordinated study of water and land needs and uses. To arrive at the best plan would require much broader planning.

3. Environmental considerations are not made a part of the plan. Some severe effects of development are beginning to be seen in rivers now developed. An example is the Trinity River below the Lewiston Dam where spawning of salmon and steelhead is being hindered by silting of spawning beds. This is attributed to the fact that spring floods no longer "flush out" the silt periodically.

   Another example is the case of the South Coastal area. It is argued by some that it is senseless to continue to furnish water for increased populations in that area where air pollution makes the wisdom of increased growth questionable from a health standpoint. It is not logical to use lack of water to limit growth (although some have advocated this), but certainly the possibility of lesser populations in that area should be considered in planning.

   Many other serious effects upon the environment could accrue from development not only as a result of the dams and reservoirs themselves but also of the network of canals, tunnels and other distribution facilities. These should be seriously and fully studied before proceeding with development. Studies by water development agencies tend to be limited to engineering and economic feasibility and do not cover other effects, except superficially.

4. The State Water Plan presents only one rather narrow plan based largely upon historical population data and land and water use. Comprehensive planning should present a range of alternatives that consider a whole gamut of variables. It should then isolate the effects of each. For example, the water requirements for

agriculture are based upon what is essentially an extension of present and historic use. It would be helpful for planning to know the effect upon water needs, the total economy, and the supply of food and fiber of simply not producing some commodities or of restricting their production. Similarly, what would be the effect of limiting the water development only to rivers now developed or only to certain specified rivers? Information so developed would give interested people a range of options to consider.

It is an established fact that the production of agricultural products has only a minimal effect upon the gross state product, income, and employment. With this knowledge, is it logical to commit our free flowing rivers to development for this purpose? At present, about 35% of our irrigated land is devoted to pasture and to the production of alfalfa. What would be the effect upon water needs, gross state product, income and employment if we imported hay and/or meat rather than developed water to produce them?

These are only a few examples. Many more could be listed.

5. A new series of population projections has been developed by the California Department of Finance. These show a drastic reduction in population growth resulting in a prediction of about 44 million in 2020, rather than the 55 million used in developing the California Water Plan. California Department of Water Resources Bulletin 160-70, to be released this year, recognizes these figures but apparently does not project much of an effect upon the plan. There appear to be some discrepancies which cannot be fully evaluated until Bulletin 160-70 is published. It will be well, however, to be aware that the conclusions reached may merit some scrutiny.

6. Other alternatives for developing water are not included in the plan.

V. Analysis of the California Water Plan

The need for water resources development in a region depends on future changes in water requirements. These water requirements, in turn, depend on population growth rates, urbanization trends, future non-withdrawal uses of water for recreational purposes, water re-use, changing patterns of household water use,

and the primary and derived demand for irrigation and industrial water implied in the production of goods and services for the needs of the projected population.

Population

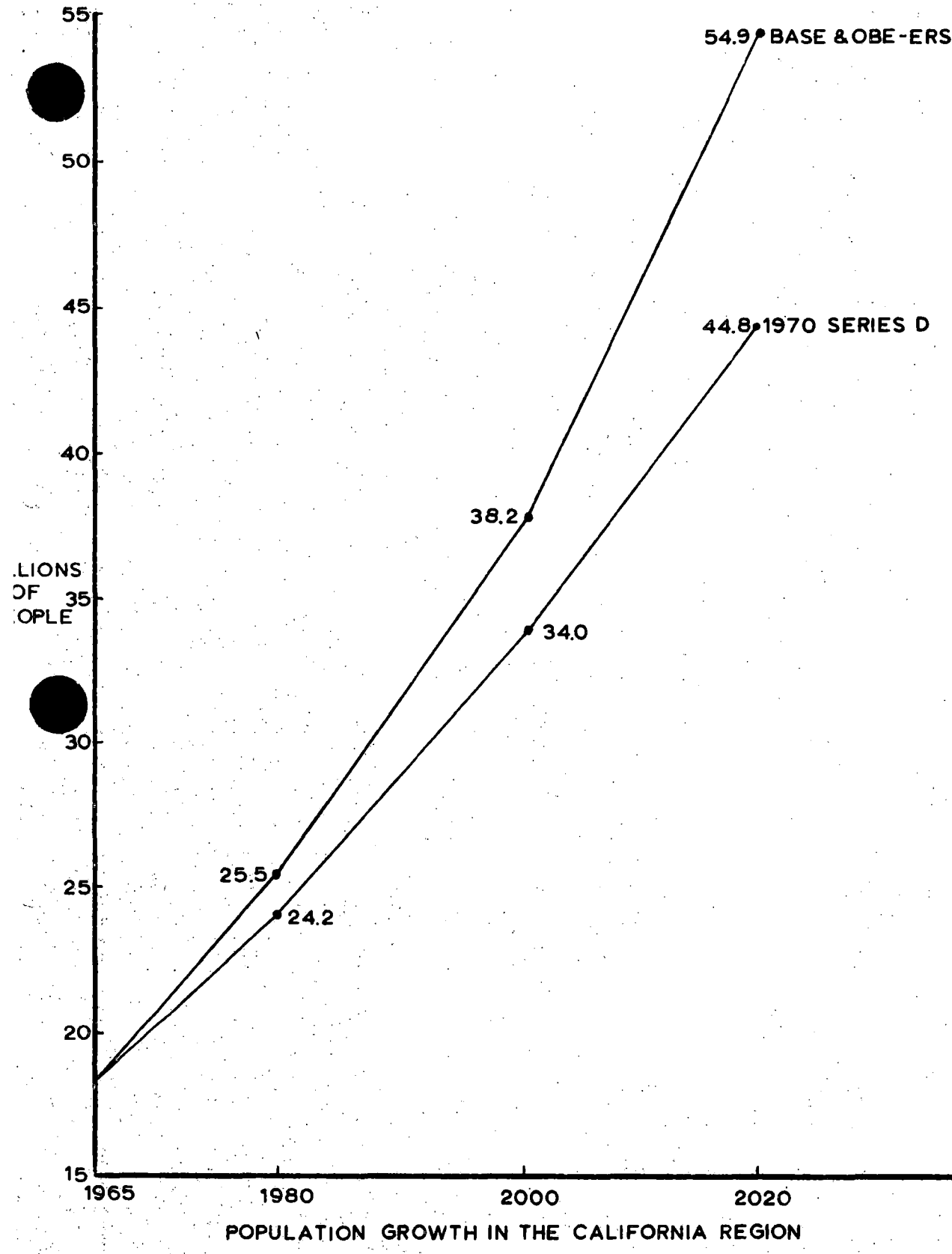
The Bureau of Census projects future nationwide populations from variable population growth rate assumptions. Each projection is given a "series" name, starting with the highest figure, Series A, then B, C, D, etc.

Figure 1 on the following page indicates the California Region's population projections of Base Plan, OBE-ERS Plan, and 1970 Series D from 1965 to 2020. Both Base Plan and OBE-ERS, derived from Series C, indicate a regional population of 54.9 million people by 2020. However, they differ in the subregional distribution of this population. Estimates of population growth and other projections used in the formulation of the California Water Plan were essentially derived from the Series C national projection. The 1970 Series D projection indicates approximately 10 million less people in California in 2020 than indicated by the Series C (Base and OBE-ERS) projections. Most demographers feel that this latest projection is much more realistic than the Series C projection because of relatively recent declines in birth rates. It is important to know that this projection of 44.8 million people is not in the lower part of the projection range; rather, it is about at the mid-point.

Gross Domestic Output

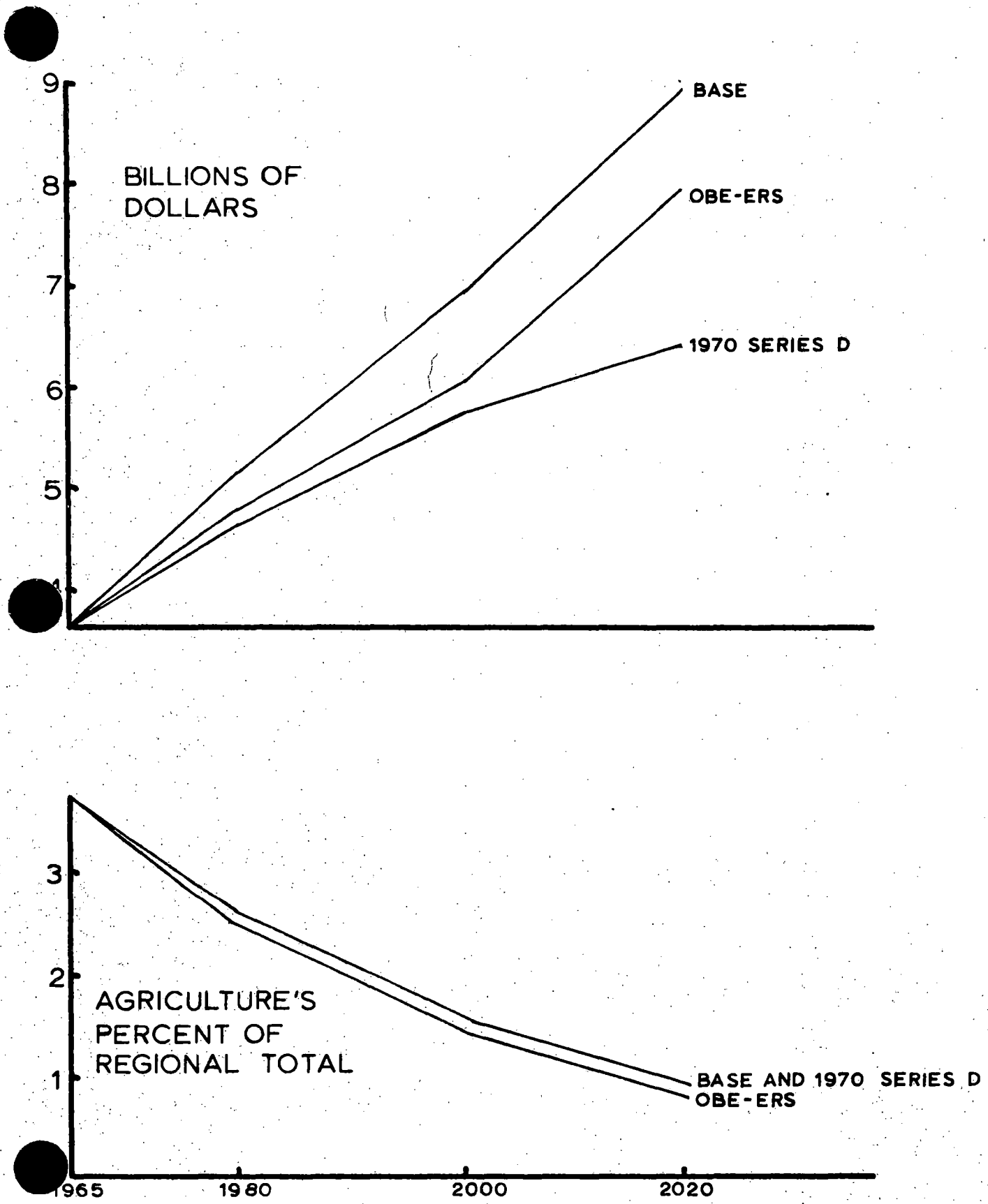
Gross Domestic Output is defined as the total dollar value of sales to other industries and to final demand.

Figure 2 indicates the projected growth of the California agricultural sector's gross domestic output for Base, OBE-ERS, and 1970 Series D levels of development. The upper portion of the figure indicates growth in billions of dollars; whereas the lower portion indicates agriculture's part of the total gross domestic output in percent. It is significant to note that while the growth rate in dollars is increasing, the agricultural sector is declining in economic importance because of the more rapid growth of the other sectors of the regional economy. Even in 1965 agriculture represented only 3.7 percent of the Region's gross domestic output.



POPULATION GROWTH IN THE CALIFORNIA REGION

FIGURE 1



GROWTH OF GROSS DOMESTIC OUTPUT OF AGRICULTURAL SECTOR

FIGURE 2

Employment

Agriculture's contribution to the total regional labor force currently is slightly less than 5 percent. By 2020 this labor force will be further reduced to only 1 to 2 percent of the total (see Figure 3). While the number of employees increases for the Base Plan, a decrease is indicated for both OBE-ERS and 1970 Series D. However, it is noteworthy to conclude that regardless of which plan is more nearly correct in the future, agriculture's contribution to the economy through employment is currently of little significance and will be even less significant in the future.

Irrigated Cropland

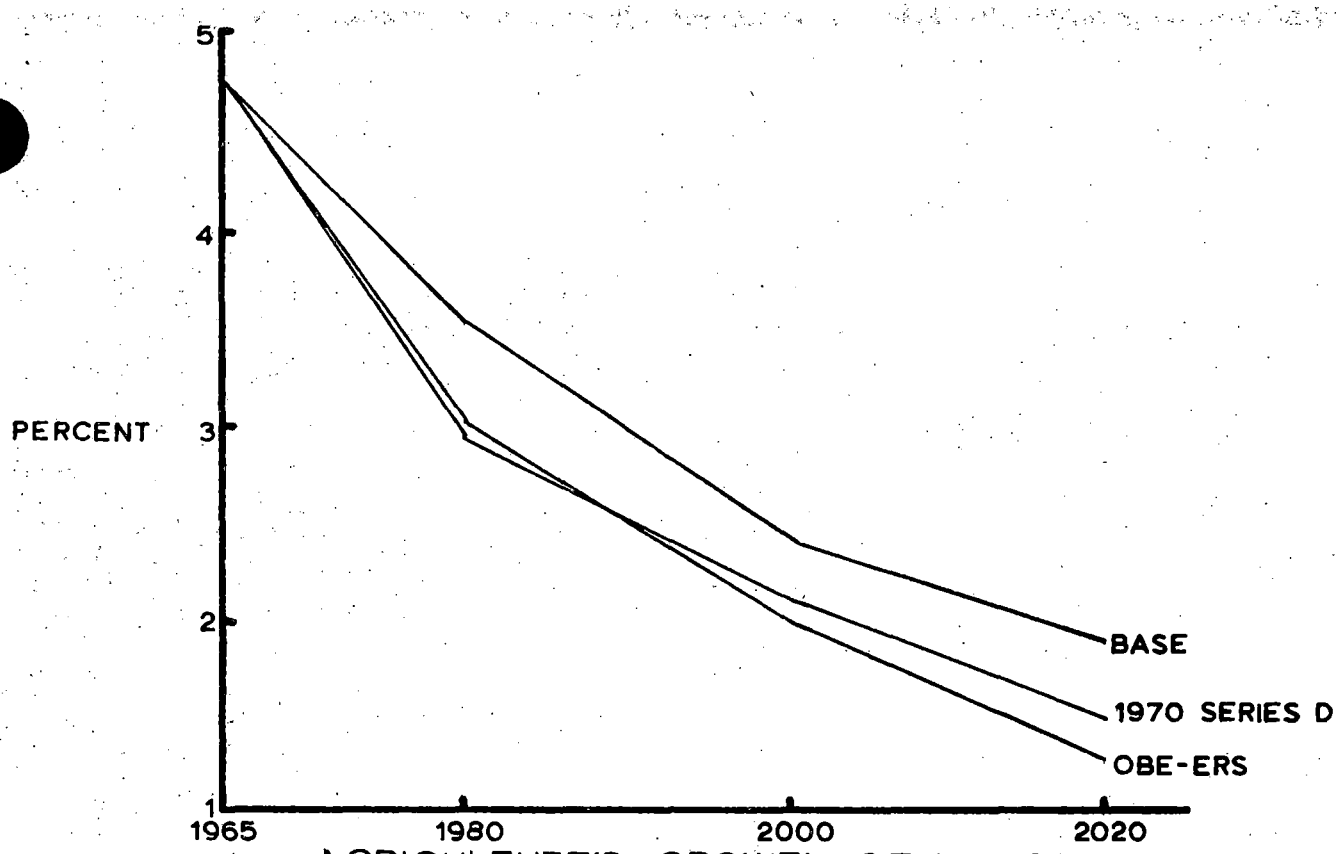
At the present time, there are 9.1 million acres of irrigated cropland in the Region (Figure 4). According to the Base Plan (California Water Plan base), 11.7 million acres will be needed by 2020. However, the 1970 Series D projection indicates a need for only 9.7 million acres (net requirements).

As stated in the Population section, most demographers feel that the Base Plan both regionally and nationally (Series C) population projections are too high. By the same token, the future needs for irrigated cropland, translated from projected food and fiber needs from the Base Plan, are unrealistically high if the lower population projection is correct.

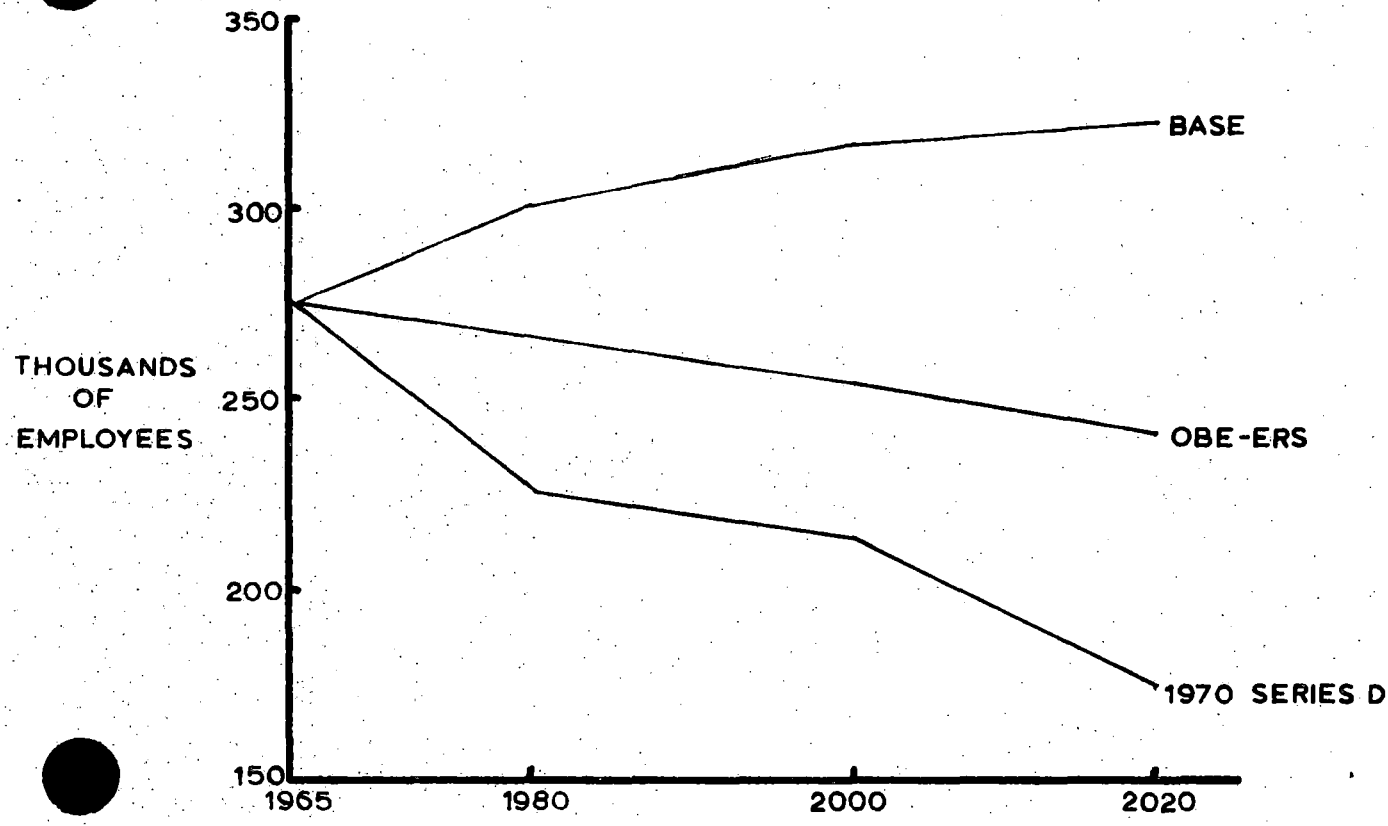
This lower projection of 9.7 million acres appears much more logical if the national situation is examined.

We, as taxpayers, through both federal and state taxes are paying farmers to keep cropland out of production and support food and fiber prices while on the other hand we are paying taxes to develop water resources for irrigating additional cropland.

In recent years, price support, acreage diversion and related programs have idled around 60 million acres of cropland nationally at a cost of nearly four billion dollars annually. Over-production in agriculture (that is, the tendency of farmers to produce more than the market will accept at "reasonable" prices) has been one of the nation's chronic problems. There is no question but that irrigation development in the West has contributed substantially to this nationwide problem. Many people question the wisdom of additional development until at least a portion of the acreage currently diverted is bought back into production.

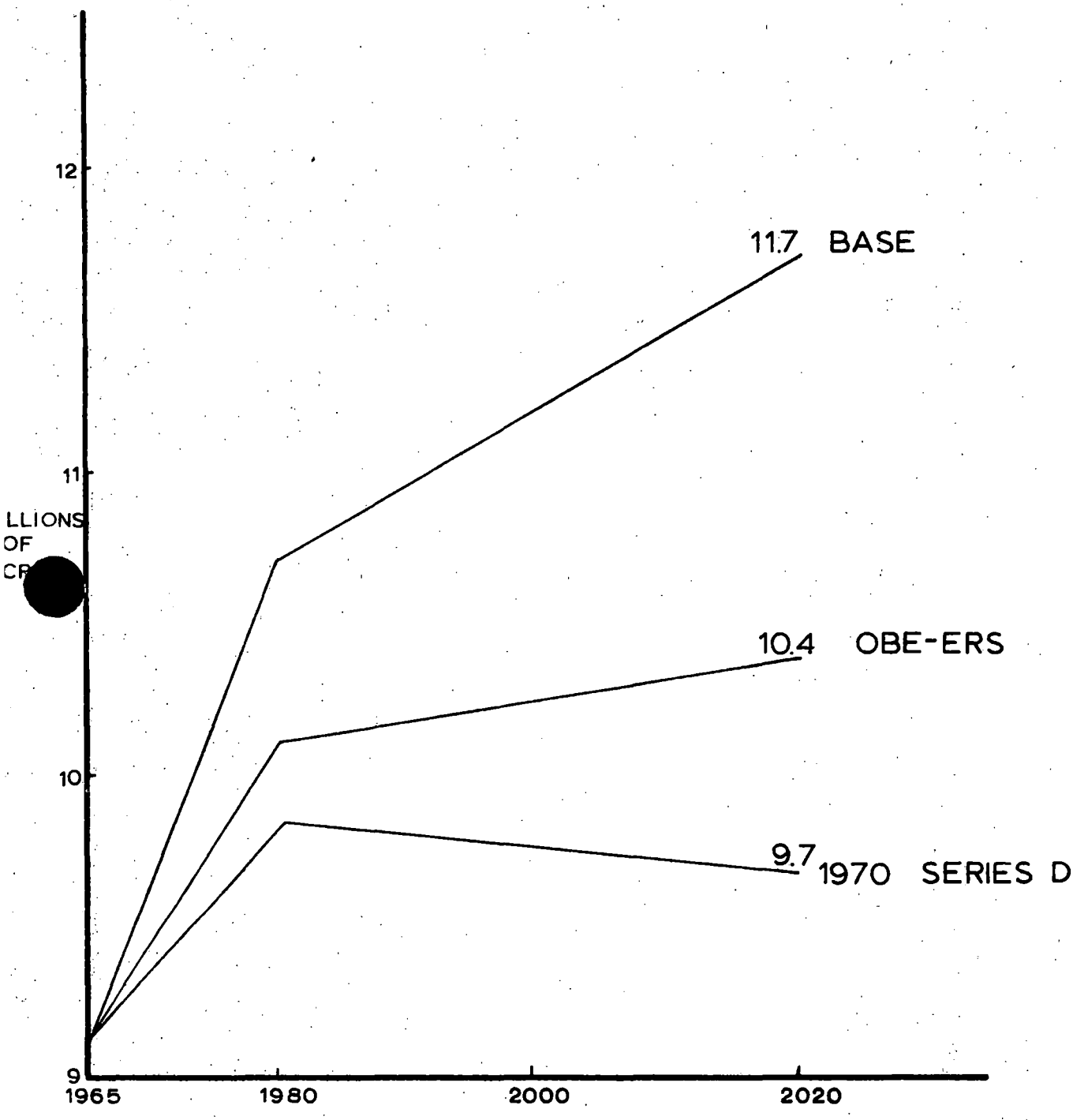


AGRICULTURE'S GROWTH OF LABOR IN PERCENT OF TOTAL REGIONAL LABOR



AGRICULTURE'S GROWTH OF LABOR

FIGURE 3



GROWTH OF IRRIGATED CROPLAND

TOTAL REGIONAL LAND ACREAGE — 104.2 MILLION ACRES

FIGURE 4

While it is very unlikely that the government will end its price support or diversion programs in the near future, the general nature of the consequences can be identified. Production (mostly feed grain) would increase and commodity prices would fall. Net returns would fall and marginal farmers would be forced out at a faster rate. Interregional shifts in production would occur with areas with large diverted acreages increasing their production. Since most of the diversion is in the high plains and mid-west, these areas would likely increase output considerably.

The California Region would likely find the prices of feed grains lower. Imports of feed grains would increase and production would likely decrease. Land and water development requirements would fall. California uses over 10 million acre feet of water to produce livestock feed in all of the projected time frames, so there is a great deal of water that could be saved by importing feed grains, fed livestock, meat or other livestock products into the region.

Recreation

Over the past several years, water development agencies have included recreation benefits as a major element in determining project feasibility. Each agency developed its own recreation demand projections for individual reservoirs without integrating that demand with state-wide demand projections.

One of the problems with this approach is that it gives an inflated demand for water-based and water-related recreation activities, because of the overlapping recreation demand zones projected from each water development proposal. The validity of these recreation demand projections can be further questioned when analyzing the demand in terms of a number of characteristics of a reservoir and its surroundings. If the maximum pool configuration is a series of deep narrow arms, projections of boating, water skiing, and swimming should be a minor part of the demand. Topography of the surrounding area can be a limiting factor in terms of road access around the reservoir, facility development, and foot travel near the water's edge. Access and location from major urban centers, including road standards and travel time, will have a bearing on demand. Climate in the general area of the reservoir can be a significant factor. Generally, those reservoirs located in favorable climates will have larger demand, other things being equal. Location, type, quality, quantity, and maintenance of adjacent recreation facilities will affect

demand. Unusual scenic attractions nearby can significantly increase the demand at a reservoir site. Annual drawdown during the recreation season can have adverse affects on demand. For instance, facilities such as boat ramps, parking lots, camping and picnic sites can become unusable or undesirable during drawdown periods. Finally, the fishery resource itself can have certain effects. Kind, quality, quantity, and the related angler success can significantly affect demand.

Recently, in the California Region Comprehensive Framework Study, it was concluded that if existing lakes and reservoirs were developed and utilized properly throughout the Region, additional "flat water" needs through year 2020 would occur only in a relatively narrow zone from Santa Rosa south to San Diego and in the southern portion of the San Joaquin Valley. This conclusion may have considerable impact on future water resource feasibility studies in northern California, where recreation benefits are now assumed to be significant.

The prospect of recreation development and its beneficial effects upon economies is often a carrot dangled in front of the populace, particularly local communities. Usually, this is somewhat of a hoax. Reservoirs developed for water supply and/or flood control are not located, designed or operated so as to provide the best recreation opportunities. The optimum location for a recreation lake is seldom the optimum location for a water supply or flood control reservoir. Also, the need to provide optimum water storage usually dictates that all the flat land in the reservoir area be inundated. The land left for development of recreation facilities, boat ramps, access roads, etc., is usually steep, often unstable, and very expensive to develop.

Most water supply reservoirs are built to provide water during the growing season and by mid-summer are drawn down to the point that their value for recreation is minimal.

Water Requirements

Of the total regional applied water requirements of 33.9 million acre feet in 1965, approximately 88 percent or 29.8 million acre feet were used for irrigated cropland. Future water requirements by 2020 for Base Plan and 1970 Series D levels of development are projected to be 54.0 and 49.0 million acre feet, respectively. The need for municipal and industrial water is expected to increase at a faster rate than irrigation water; however, the total irrigation water needs for Base Plan and 1970 Series D are 72 and 67 percent of the total water requirements in 2020, respectively.

At the present time, water for municipal and industrial use and for irrigated cropland is being used relatively inefficiently. Studies indicate that an overall 20 to 40 percent savings could occur in the future if new programs are carried out. These programs would include reducing evaporation and conveyance losses, improving irrigation practices, and reducing municipal and industrial use through additional recycling of waste water, metering, etc. However, the projected requirements do not include these programs; rather, they reflect essentially the current inefficient use of water per unit projected into the future.

If the California Water Plan is completed, based on existing water requirement projections, the water, no doubt, will be used -- however inefficiently. The mere fact that it is available will encourage additional economic development of the Region. With the present environmental deterioration in the Los Angeles Basin, it is quite conceivable that this additional development would only damage the environment to a much greater extent.

Currently, water development agencies have plans for surface water development through reservoir construction that would meet or exceed the maximum water requirements of the Base Plan through 2020. While there is talk of seeking alternative means for meeting future water needs, very little is being accomplished. By far, most of the planning money is being expended in finding new reservoir sites and in determining their economic feasibility. It would appear, under the circumstances, that other alternatives or combinations of traditional surface reservoir development and other alternatives be fully explored now before additional water is needed. Studies of desalination, weather modification, water recycling, and more efficient use of water should have the highest priority in present and future planning for meeting future water needs.

Consequences of Not Meeting Water Requirements

What would happen if the Base Plan water requirements are not met? Under certain conditions, there would be little impact if these requirements are not met.

Mention was made in the Water Requirements Section of this paper that studies indicate savings of water from 20 to 40 percent could result if certain programs are carried out. If a water savings of 30 percent is assumed, the total water requirements by 2020 for

all needs would be reduced from 54.0 to 37.8 million acre feet. This reduction of 16.2 million acre feet could eliminate the need for further development of the north coast rivers (beyond those already authorized in the California Water Project).

Further analysis of the Base Plan water requirements for California's agricultural sector indicates that the regional economy will suffer very little if these water requirements are not met. Under base plan projections of gross domestic output, there will be an increase from 3.7 billion dollars in 1965 to about 9 billion for the agricultural sector. However, this represented only 3.7 percent of the total regional gross domestic output in 1965. Since the other regional economic sectors will increase at a faster rate than agriculture, by 2020 Agriculture's share will decrease to slightly less than one percent of the regional gross domestic output. Likewise, under the Base Plan, agriculture employment will increase from 1965 to 2020, but its share of the total labor force will decrease from slightly less than 5 percent in 1965 to less than 2 percent in 2020.

As mentioned in the Irrigated Cropland Section, the Base Plan indicates a need of an additional 2.6 million acres of irrigated cropland (net) by year 2020. Since the national and regional situation of over-production of crops exists at the present time and since a substantial amount of cropland is being kept out of production, the need for developing additional water resources for more irrigated cropland in the future appears completely unsubstantiated.

Furthermore, if the 1970 Series D projections are more realistic than Base Plan projections, there will be even less impact on the regional economy if the water requirements are not met.

Impacts of the Base Plan on National Forests

If the planned water developments under the Base Plan do, in fact, become a reality, significant impacts will occur on the resources, use of resources, and management on national forest lands. Many of the major reservoirs planned for future development will be located, at least in part, on national forest. The direct result will be the inundation of valuable land currently managed under the multiple-use concept. Timber producing land, prime grazing land, and key wildlife winter range will be eliminated. Anadromous fisheries, both for sport and commercial use, will be seriously depleted in Northern California.

Important rivers that could be set-aside as "wild" or "scenic" under the Wild and Scenic Rivers Act would simply be eliminated from future consideration. Currently, of the four rivers (Smith, Klamath, Tuolumne, and Kern) having 5d status under the Wild and Scenic Rivers Act, and that the Forest Service has responsibility for studying, two, the Klamath and the Kern, already have been included in future water development plans. Other major streams of national significance for possible inclusion in the wild and scenic classification simply could not be considered later if the Base Plan water requirements are met through surface water developments.

Finally, other lesser, but still quite important, impacts will occur on the national forests if the Base Plan is put into effect. Additional roads, powerlines and other special uses will alter the use and management of the national forests. Modifications of timber harvesting and grazing will occur on land adjacent to reservoirs.

The potential loss to the public falls into two general categories. First, there is the direct loss of resources mentioned above. Many of these are irreversible. The decisions made now will alter the natural resources permanently. Second, there is a needless waste of tax money as the taxpayer is paying large sums for unnecessary development and, in some cases, for conflicting programs.

Finally, the Forest Service has been given the job of managing, protecting and developing the national forests. We have no authority to abdicate that responsibility or to give part of it to another agency. When we do so we are weakening our position and not fulfilling our obligation to the people.

I. Recommendations

It is recommended that the Forest Service:

(1) Identify and study proposed water developments well in advance of authorization. Using a systematic approach, probably in the format of a Stage I impact survey report, we should analyze all aspects of development, not necessarily waiting until we are invited to do so by development agencies. By the time we are asked to participate, it is often difficult to make substantive changes.

Factors that should be considered include: the justification for each development; the alternative locations and sizes of structures; the impact upon national forest resources

and our multiple use programs; and the true economic impacts, particularly upon local areas. Forest Service State and Private responsibilitities should be fully considered in the analysis.

(2) Actively participate in selecting the alternative that best satisfies our needs and creates the least impact upon our programs. In the event that our studies indicate that a proposal is not in the best interests of the public, as we see it, we should vigorously oppose development. Part of such opposition should be to take our case to the public through public hearings and the news media. This would help to give emphasis to the fact that we accept full responsibility for the management of the public lands under our jurisdiction and that we take this responsibility seriously. Proposals which substantially affect the use and management of privately owned forest and related lands should be treated in much the same way, although we might not be able to give as much detailed attention to these.

One of the benefits of asserting ourselves with regard to water development could be to place us in a position of leadership, where we should be, in matters pertaining to environmental quality and enlightened land use and management.